

**Amendments to the Claims:**

- Claim 1 (Currently Amended) A process for oligomerizing a Fischer-Tropsch derived C<sub>5+</sub> feed containing oxygenates to produce a Fischer-Tropsch product comprising diesel, said process comprising:
- (a) reducing significantly the oxygenates present in the Fischer-Tropsch derived C<sub>5+</sub> feed by contacting said feed in a hydrotreating zone with a hydrotreating catalyst under hydrotreating conditions wherein the cracking conversion is 20 percent or less and recovering from the hydrotreating zone a Fischer-Tropsch derived hydrotreated C<sub>5+</sub> feed which contains a significantly reduced amount of oxygenates as compared to the Fischer-Tropsch derived C<sub>5+</sub> feed and also a significant amount of paraffins;
  - (b) pyrolyzing the Fischer-Tropsch derived hydrotreated C<sub>5+</sub> feed in a thermal cracking zone under thermal cracking conditions pre-selected to crack the paraffin molecules to form olefins and collecting an olefin-enriched Fischer-Tropsch feed from the thermal cracking zone;
  - (c) contacting the olefin-enriched Fischer-Tropsch feed with a Lewis acid ionic liquid catalyst in an oligomerization zone under oligomerization reaction conditions; and
  - (d) recovering from the oligomerization zone a Fischer-Tropsch derived product comprising diesel and having molecules

characterized by increased branching as compared to the  
Fischer-Tropsch derived C<sub>5+</sub> feed.

- Claim 2 (Currently Amended) The process of claim 1 wherein the Fischer-Tropsch derived hydrotreated C<sub>5+</sub> feed is substantially free of oxygenates.
- Claim 3 (Currently Amended) The process of claim 2 wherein the Fischer-Tropsch derived hydrotreated C<sub>5+</sub> feed contains less than 200 ppmw elemental oxygen.
- Claim 4 (Currently Amended) The process of claim 3 wherein the Fischer-Tropsch derived hydrotreated C<sub>5+</sub> feed contains less than 100 ppmw elemental oxygen.
- Claim 5 (Original) The process of claim 1 wherein the hydrotreating catalyst is a non-acidic hydrotreating catalyst.
- Claim 6 (Original) The process of claim 5 wherein the hydrotreating catalyst contains the metal nickel and molybdenum.
- Claim 7 (Original) The process of claim 1 wherein the hydrotreating conditions in the hydrotreating zone include a temperature of between about 400 degrees F and about 800 degrees F, an LHSV of between about 0.5 and about 5.0, and a total pressure between about 200 psig and about 2,000 psig.

- Claim 8 (Original) The process of claim 7 wherein the temperature in the hydrotreating zone is less than about 675 degrees F.
- Claim 9 (Original) The process of claim 7 wherein the LHSV is between about 1 and about 4.0.
- Claim 10 (Original) The process of claim 1 wherein the temperature in the thermal cracking zone is within the range of from about 950 degrees F and about 1,600 degrees F.
- Claim 11 (Original) The process of claim 1 wherein the pressure in the thermal cracking zone is within the range of from about to about 0 atmospheres and about 5 atmospheres.
- Claim 12 (Original) The process of claim 11 wherein the pressure in the thermal cracking zone is within the range of from about to about 0 atmospheres and about 2 atmospheres.
- Claim 13 (Original) The process of claim 1 wherein the cracking conversion in the thermal cracking zone is greater than about 10 weight percent of the paraffins present.
- Claim 14 (Original) The process of claim 1 wherein the ionic liquid oligomerization catalyst comprises a first component and a second component, said first component comprising a compound selected from the group consisting of aluminum halide, alkyl aluminum halide, gallium halide, and alkyl gallium halide, and said second component is a quaternary ammonium, or quaternary phosphonium salt.

- Claim 15 (Original) The process of claim 14 wherein the ratio of the first component to the second component is within the range of from about 1:1 to about 2:1.
- Claim 16 (Original) The process of claim 14 wherein said first component is aluminum halide or alkyl aluminum halide.
- Claim 17 (Original) The process of claim 14 wherein said second component is selected from one or more of hydrocarbyl substituted ammonium halide, hydrocarbyl substituted imidazolium halide, hydrocarbyl substituted pyridinium halide, alkylene substituted pyridinium dihalide, or hydrocarbyl substituted phosphonium halide.
- Claim 18 (Original) The process of claim 1 including the additional step of dewaxing the Fischer-Tropsch derived product recovered from the oligomerization zone and collecting a dewaxed Fischer-Tropsch product having improved cold flow properties relative to the Fischer-Tropsch derived product recovered from the oligomerization zone.
- Claim 19 (Original) The process of claim 18 wherein the Fischer-Tropsch derived product is catalytically dewaxed.
- Claim 20 (Original) The process of claim 18 including the additional step of hydrofinishing the dewaxed Fischer-Tropsch product.

- Claim 21      (Original)      The process of claim 1 wherein the Fischer-Tropsch derived product includes lubricant base oil.
- Claim 22      Cancelled
- Claim 23      (Currently Amended) A process for producing Fischer-Tropsch derived lubricant base oil which comprises:
- (a)      recovering from a Fischer-Tropsch plant a wax fraction;
  - (b)      reducing significantly the oxygenates present in the Fischer-Tropsch wax fraction by contacting said wax fraction in a hydrotreating zone with a hydrotreating catalyst under hydrotreating conditions wherein the cracking conversion is 20 percent or less and recovering from the hydrotreating zone a hydrotreated Fischer-Tropsch derived wax feed which contains a significantly reduced amount of oxygenates as compared to the Fischer-Tropsch derived wax fraction and also a significant amount of paraffins;
  - (c)      pyrolyzing the hydrotreated Fischer-Tropsch derived wax feed in a thermal cracking zone under thermal cracking conditions pre-selected to crack the paraffin molecules to form olefins and collecting an olefin-enriched Fischer-Tropsch feed from the thermal cracking zone;

- (d) contacting the olefin-enriched Fischer-Tropsch feed with a Lewis acid ionic liquid catalyst in an oligomerization zone under oligomerization reaction conditions;
- (e) recovering from the oligomerization zone a Fischer-Tropsch derived oligomerization effluent having molecules characterized by a higher average molecular weight and increased branching as compared to the Fischer-Tropsch derived feed;
- (f) catalytically dewaxing the Fischer-Tropsch derived oligomerization effluent by contacting the Fischer-Tropsch derived oligomerization effluent with a dewaxing catalyst under catalytic conditions in a dewaxing zone and collecting a dewaxed Fischer-Tropsch product from the dewaxing zone having improved cold flow properties relative to the Fischer-Tropsch derived oligomerization effluent;
- (g) hydrofinishing the dewaxed Fischer-Tropsch product in a hydrofinishing zone under hydrofinishing conditions in the presence of a hydrofinishing catalyst; and
- (h) collecting a Fischer-Tropsch derived lubricant base oil from the hydrofinishing zone.

Claim 24 (Original) The process of claim 23 wherein the oxygenates in the hydrotreated Fischer-Tropsch derived wax feed recovered from the hydrotreating zone is substantially oxygenate free.

- Claim 25 (Original) The process of claim 24 wherein the hydrotreated Fischer-Tropsch derived wax feed recovered from the hydrotreating zone contains less than 200 ppmw elemental oxygen.
- Claim 26 (Currently Amended) A process for producing Fischer-Tropsch derived lubricant base oil which comprises:
- (a) recovering from a Fischer-Tropsch plant a condensate fraction;
  - (b) removing substantially all of the oxygenates present in the Fischer-Tropsch condensate fraction by contacting said condensate fraction in a hydrotreating zone with a hydrotreating catalyst under hydrotreating conditions wherein the cracking conversion is 20 percent or less and recovering from the hydrotreating zone a substantially oxygenate-free Fischer-Tropsch derived condensate feed which also contains a significant amount of paraffins;
  - (c) pyrolyzing the substantially oxygenate-free Fischer-Tropsch derived condensate feed in a thermal cracking zone under thermal cracking conditions pre-selected to crack the paraffin molecules to form olefins and collecting an olefin-enriched Fischer-Tropsch feed from the thermal cracking zone;
  - (d) contacting the olefin-enriched Fischer-Tropsch feed with a Lewis acid ionic liquid catalyst in an oligomerization zone under oligomerization reaction conditions;

- (e) recovering from the oligomerization zone a Fischer-Tropsch derived oligomerization effluent having molecules characterized by a higher average molecular weight and increased branching as compared to the Fischer-Tropsch derived feed;
- (f) catalytically dewaxing the Fischer-Tropsch derived oligomerization effluent by contacting the Fischer-Tropsch derived oligomerization effluent with a dewaxing catalyst under catalytic conditions in a dewaxing zone and collecting a dewaxed Fischer-Tropsch product from the dewaxing zone having improved cold flow properties relative to the Fischer-Tropsch derived oligomerization effluent;
- (g) hydrofinishing the dewaxed Fischer-Tropsch product in a hydrofinishing zone under hydrofinishing conditions in the presence of a hydrofinishing catalyst; and
- (h) collecting a Fischer-Tropsch derived lubricant base oil from the hydrofinishing zone.

Claim 27 (Original) The process of claim 26 wherein the substantially oxygenate-free Fischer-Tropsch derived condensate feed recovered from the hydrotreating zone contains less than 200 ppmw elemental oxygen.

Claim 28 (Original) The process of claim 27 wherein the substantially oxygenate-free Fischer-Tropsch derived condensate feed recovered



from the hydrotreating zone contains less than 100 ppmw elemental oxygen.

Claim 29      (Original)      The process of claim 26 wherein a diesel product is also collected from the hydrofinishing zone.